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SPECIES LIFE HISTORY AND HABITAT REQUIREMENTS

MOURNING DOVE

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MOURNING DOVE

A. Importance. The mourning dove is considered the number one American game bird by many wildlife authorities. It is legally hunted in 30 states, and the estimated annual harvest of 30 million is greater than any other game bird. Dove hunting is particularly important in the southwestern states where the Bureau administers vast acreages of land, namely California, Nevada, Arizona, Utah, New Mexico, and Colorado. In recent years of good dove production, 200,000 California hunters alone harvested more than 3 million doves.

B. Distribution. Doves are the most widely distributed of our game birds, breeding in 48 of the 50 states. In addition to the wide area distribution, doves also have a great vertical distribution, breeding and nesting from sea level to over 10,000 feet elevation. Mourning doves have shown remarkable ability to adapt to man-caused changes in habitat. Doves have adapted to living in close association with man on farms and in cities and is the only game bird that commonly lives in cities. Doves are probably more numerous and occupy a more diverse habitat now than before the vegetative cover of the U.S. was so greatly modified by man.

C. Habitat. The dove occupies a variety of habitats including salt desert shrub, sagebrush, chaparral, mountain brush, and mesquite brushlands, irrigated croplands and orchards, farm fields, windbreaks and open woodland. It is easier to define dove habitat by listing unsuitable habitat. Doves do not utilize, to any great extent, dense forest or large open prairies or marshes. The highest densities of nesting doves occur where there is an interspersion of trees and open lands.

D. Life History.

1. Courtship and Breeding. Initiation of the spring breeding season is regulated by the increasing length of day; however, the relation of food intake to length of day, nighttime temperatures, and the amount of energy available for reproduction play important roles. The break up of winter flocks and formation of breeding pairs is often slowed or temporarily reversed by spells of cold weather but as soon as warmer weather returns breeding activities resume.

The male dove selects a nesting territory and defends this area against other male doves. The dove is not as strongly territorial as many other birds and usually ends up defending a small area immediately around the nest. Calling or cooing is one form of defending or proclaiming a

territory. The first cooing coincides with the first springlike days. Doves in the southwestern part of the range begin cooing in late February or early March and cooing is progressively later in more northern areas.

2. Nesting. After courtship displays and breeding activities are completed, nest construction usually starts in late March or April varying with latitude. The selection of a nesting site depends on the geographic area and the habitat available. Doves nest in trees and on the ground as described under nesting cover, page 4. The male apparently selects the nest location. After the site has been selected, the male brings nesting material to the female and she actually constructs the nest. The nest is a loosely constructed platform lacking the cup-like shape characteristic of many other birds. The nest is so flat eggs often roll out on windy days. Nests are constructed of grass, grass roots, twigs, etc. depending on availability of materials and, if in a tree, are located in crotches on large limbs. Nest sites range from 5 to 75 feet above ground but average 10 to 15 feet. In large conifers such as fir or spruce the nest is often situated on the dense boughs near the periphery of the tree. The nest of other birds are sometimes appropriated as a nesting site. Nests are so lightly constructed it is often possible to see the eggs through the bottom of the nest. Construction takes from one to six days, but most are completed in two or three days.

Soon after the nest is completed the female lays the first of the usual two eggs. Less than three percent of the clutches contain one or three eggs. The first egg is laid in the afternoon and the second egg within 36 hours. Incubation starts as soon as the first egg is laid except early in the season when incubation more often begins after both eggs are deposited. Both parents incubate the eggs for the 14 to 15 days required for hatching.

The mourning dove has a very long nesting season beginning in March in some areas and extending through September. A period of about one month is required from beginning of egg laying to fledging of young. The major peaks of nesting occur in June and July, and most young are produced during this period. If a nest is destroyed the pair will usually construct a new nest within a few days.

3. Rearing of Young. The young of mourning doves, like other doves and pigeons, are altricial, that is, hatched in a very immature and helpless condition requiring parental care for survival. Doves are blind and covered with natal down when newly hatched but have an amazingly rapid movement. About ten days after hatching they are

capable of flying and most fledge or leave the nest voluntarily when 12 to 14 days old. Newly hatched doves weigh about 7 grams and 12 days later average 70 grams when ready to leave the nest. Parental care is thorough; both parents participate in almost constant brooding and both share in the feeding activities. Dove squabs are fed "pigeon milk", a regurgitated milky secretion from glands in the crop of the parents. As the young mature, they are fed an increasing percentage of seeds.

4. Productivity. Despite the small clutch size and fragile nest construction which often contributes to nest destruction, the species makes up for these shortcomings by the long nesting season and repeated nesting efforts. Dove populations in the southern portions of the country appear to have lower rates of nesting success compared with other dove populations; however, these southern dove populations compensate for lower success by producing more clutches. A complete nesting cycle (nest building, egg laying to fledging) requires about one month. In parts of the range with a six-month nesting season, six nesting attempts have been recorded and twelve fledglings produced. Production of fledglings in an average year would be about four to six over the entire nesting season. Studies on the annual mortality of doves have shown population turnovers ranging from 40 to 80% in a one-year period. A population with a 70% average yearly loss would require each nesting female to produce 4.6 young in the summer to bring the fall population back to the previous year's level. This high annual death toll of doves occurs whether or not doves are hunted. The hunter harvested birds are not in addition to, but rather a part of, the large segment of the population lost each year. Even though hunting harvest might reach 10 to 30% of the population, hunting is not currently considered an important factor controlling dove populations. The large annual population turnover makes axiomatic the fact that the size of the fall population during the hunting season is largely dependent on the summer production of the same year.

E. Migration. The family "Columbidae" of which doves are members are primarily of tropical and subtropical origin. Doves are not well adapted for winter survival in northern regions because of their water requirements, feeding habits and physical structure. Most doves breeding in the northern part of their range migrate south at the first signs of cold weather; however, a few, one or two percent, remain in the north. Those birds remaining in the northern areas are generally dependent on farm feed lots for food and even with adequate food available frequently suffer high losses from cold weather.

The peak population of doves occurs in August and September at the close of the breeding season. At this time the birds assemble in small

flocks and are triggered by the first low temperatures to move southward. The southward movement is leisurely, and the birds frequently stop to feed and drink. During the winter the birds remain in small flocks and remain in areas with ample food and roosting cover. In the spring, warmer days and increasing day length stimulate the birds to begin the movement to northern nesting areas. The speed of the northward movement is determined to a large extent by the weather.

F. Cover Requirements.

1. Nesting Cover. The adaptability of the dove to a wide variety of habitat is further demonstrated by its ability to nest in coniferous and deciduous trees, a wide variety of shrub species as well as on the ground. The most commonly used nesting cover is a tree, preferably on the edge of or surrounded by open land. The species of tree is not as important as the relationship of trees and open areas. In the West, particularly in the sagebrush and salt desert shrub types, doves usually nest on the ground. The key to site selection is the mixture of isolated woody plants in a generally open situation. Doves prefer large trees, particularly those with broad surfaces of dense branches, crotches, or large limbs for nesting sites. Nesting cover is enhanced by high open perches near the nesting site. These open perches can be dead tree limbs, poles, telephone wires, etc. Tree nesting is more successful and the density of nests is higher but in treeless areas of the West, ground nesting may be more important to production.

2. Feeding Cover. Dove feeding areas are determined by availability of suitable seeds. Feeding areas must be within the daily cruising range of the dove. The daily cruising range also must include the required watering and roosting sites. Doves prefer feeding areas which are open and provide good visibility to the feeding birds. Feeding cover is important but is generally available and abundant. Doves use gravel in the gizzard to help grind the seeds taken for food and often pick feeding areas where small gravel is available.

3. Loafing and Roosting Cover. Dove loafing cover often consists of high perches such as telephone wires or dead trees which provide an open view of the surrounding area. In treeless areas doves loaf on the ground, usually in bare areas where visibility is good and loose soil is available for dust baths. Dove roosting cover requirements vary greatly from one area to another. In California Cowan (Reference #4) found doves roosting in open fields of sparse vegetation, usually grazed pasture land and stubble hay fields adjacent to nesting or feeding areas. In the southern and eastern part of the range doves prefer to roost in dense groves of evergreen trees.

4. Escape Cover. Doves rely on sight and speed to avoid enemies and usually do not retreat to thickets for protection. Doves are most vulnerable to predation while nesting and usually fly just out of range of mammaliam predators. To flee avian predators they rely on speed and agility.

G. Food Habits.

1. Feeding Behavior. Mourning doves are seed eaters. About 98% of their food consists of seeds and the remaining 2% of animal matter is probably taken by accident or mistaken for seeds. The weakly developed feet determine the feeding behavior. Doves do not scratch in the litter for food as do most upland game birds nor do they cling to upright stalks or seed heads. They feed on seeds which are lying exposed on the surface of the ground.

Doves follow a well developed ritual of feeding and watering as described by Schmid (Reference #13).

a. early morning feeding to fill crops
b. morning watering after feeding
c. midday roosting and digesting food from morning feeding
d. late afternoon feeding
e. evening watering after feeding
f. flight to night roost areas

2. Food Requirements. Dove use of seeds is a direct response to seasonal availability. Spring foods are early maturing annuals, summer foods consist of later maturing annuals, and fall and winter foods are persistent weed seeds as well as cultivated grains. Doves take almost any small seed and the bulk of the diet at any particular season is determined by supply. Few seeds are too small for doves. As many as 7,500 wood sorrel seeds were found in a single dove crop, and 6,400 foxtail grass seeds were recorded in another crop. Most dove foods are produced on lands disturbed by man's activities, cultivation, grazing, road construction, or other activities which foster annual weeds and cultivated plants. The condensed findings of selected food habit studies from North Dakota, Idaho, Colorado, and California follow.

Studies by Schmid (Reference #13) in North Dakota showed three common grass seeds made up 81% of the diet.

green foxtail, Setaria viridis
yellow foxtail, Setaria lutescens
domestic wheat, Triticum aestivum

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Haynes (Reference #10) described dove food habits in Idaho as taking early maturing weed seeds in early summer, cultivated grains after grain crops are harvested in late summer and wild sunflower seeds in the fall. In Colorado, Ward (Reference #16) studies 247 dove crop contents collected in spring, summer, and fall and found approximately 30% grass seed and 70% forb and weed seeds.

Grass species

wheat, Triticum aestivium
witchgrass, Panicum spp.
corn, Zea mays
Bristlegrass, Setaria spp.
sorghum, Sorghum vulgare
ricegrass, Oryzopsis hymenoides

Forb and weed species

sunflower, Helianthus spp.
doveweed, Croton texensis
pigweed, Amaranthus spp.
spurges, Euphorbia spp.
violets, Viola spp.

Browning (Reference #2 and 3) found in California that doves consumed seeds from 162 plant species representing 38 plant families. Eleven plant species made up 95% of the food. Major plant species were:

turkey mullein, Eremocarpus setigerous
red maids, Calandrinia caulescens
wheat, Triticum aestivum
milk thistle, Silybum marianum
windmill pink, Silene gallica
valley spurge, Euphorbia ocellata
buckhorn weeds, Amsinckia spp.
California poppy, Eschscholtzia californica
frying-pans, Eschscholtzia lobbii
Napa thistle, Centaurea melitensis
lambs quarter, Chenopodium album

About two thirds of the food was seeds of annual weed species; the other one third was cereal grains.

3. Water Requirements. Experiments have shown under laboratory conditions that doves can survive 5 days without water and still retain the powers of flight. In the wild, good habitat depends on water being available within the daily cruising range of doves. Doves can inhabit arid areas because of their ability to temporarily withstand dehydration and because their strong powers of flight permit them to range long distances from water. The distribution of doves in arid areas is determined by the availability of water. Doves will use practically any source of water but prefer shallow edges of ponds and streams which are free of vegetation and where gravel and sand are available.

H. Limiting Factors.

1. Cover. The various cover components as outlined under Cover Requirements must be present to make good dove habitat, however, doves are very adaptable and a wide range of conditions fulfill the needs. Cover requirements are easily met and with local exceptions are not in short supply and limiting.

2. Food. Food is seldom a limiting factor to dove numbers because doves are mobile and utilize a wide variety of seeds from plant species which are abundant and widely distributed. Food is most likely to be limiting when heavy snow cover persists for extended periods over large sections of wintering grounds. Snow cover may make food temporarily unavailable in local areas but this situation does not significantly affect dove numbers over a large area.

3. Water. The ability to successfully occupy arid areas, often under severe desert conditions, is due to the doves' mobility and wide ranging habits. Doves do not appear to have any physiological mechanisms which would account for unusual abilities in their water economy. Water availability in desert areas is the major determinant of dove distribution.

4. Weather and Production. The high annual population turnover inherent in dove populations insures that dove numbers each year are largely determined by annual production for that year. Nesting success, particularly in the early spring, has been adversely affected by cool and prolonged heavy rains as well as high winds. High winds actually destroy nests and eggs while cool rain inhibits nesting activity. Dove populations have been temporarily depressed by the conditions described above as well as by severe freezes and ice storms in wintering areas. Doves are not well adapted structurally to severe cold and high mortality of both immatures and adults has been recorded due to freezing. Doves are sometimes observed with missing toes or

even feet due to freezing. These depressing effects on dove populations are temporary and recovery is fairly rapid when favorable conditions return.

5. Disease and Parasites. Doves, like other organisms, have their disease and parasite problems. It is difficult if not impossible to determine the importance of diseases and parasites in natural mortality. Lethal results of diseases have been observed on individual birds, but the major effect of diseases and parasites is probably that the deleterious effects show up during periods of stress.

6. Predators. The principal avian predators are the Cooper's and sharp-shinned hawks. These birds prey to a minor extent on adult and immature doves. Other birds such as jays, grackle, starlings, and magpies prey on dove eggs and nestlings. Many other predators will take doves when the opportunity presents itself. Predation is greatest during the nesting season when many bird, mammalian, and even insect predators take eggs and nestlings. This fairly heavy loss to predation is normal and overcome by the long nesting season and repeated nesting attempts by doves.

7. Hunting. Mortality due to hunting does not appear to be a serious factor controlling dove populations. The losses to hunting are a part of the normal high annual loss and not in addition to natural mortality. Hunting is somewhat self-regulating; that is, in years of low dove numbers, hunting effort decreases and conversely, in high years hunting effort and success increases. Dove behavior under hunting pressure also tends to decrease hunting success after hunting starts. Harvest is much easier on the first day or two of the season when doves continue to come into feeding areas after being shot at but after a few days dove flocks break up and singles and small groups fly high and wait until almost sundown to return to feeding areas. This behavior tends to limit the harvest and is reflected in the great decline in hunting pressure after the first few days.

I. Management. Since the dove has responded favorably to the many manmade changes in habitat, management has been primarily limited to harvest regulations. The dove is migratory and its status is defined by the Migratory Bird Treaty Act of 1918. This act assigns regulatory responsibility with the U. S. Fish and Wildlife Service. Mourning doves are presently managed in the U. S. on the basis of three management units. The units were designated on the basis of dove migration movements as determined by banding studies and are as follows:

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(1) The eastern management unit consists of the 27 states east of the Mississippi River and includes Louisiana. Sixteen of the 27 states in the eastern unit have hunting seasons. (2) The central management unit consists of 14 states extending from Minnesota to Arkansas on the east and from Montana south to New Mexico on the west. Seven of these 14 states have dove hunting seasons. (3) The western management unit includes Arizona, California, Idaho, Nevada, Oregon, Utah, and Washington, and all currently have dove hunting seasons.

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